

Claims 1-10, 14-22, 26-27 and 32-35 have been rejected under 35 U.S.C. 102(b) as being anticipated by the Luo reference (U.S. Patent 6,378,234). The Luo reference is applied to each of these claims, however only claims 1-8 are formerly recited as rejected under 35 U.S.C. 102(b).


Before responding to this rejection, it is important to note a few salient differences between the Luo reference and the present invention. First, the most significant difference is that the Luo reference does not teach a multidirectional key, joystick or button. In the Luo reference, all of the keys are unidirectional. A keystroke is only a downstroke of the key in Luo. This is a one-directional movement; the rebound of the key is by spring loading the key and is not input information for the device using the key. In another significant difference, the Luo reference does not teach successive sets of information elements selected by sequential movements of the same multi-directional key. In Luo, linked keystrokes, meaning a succession of unidirectional key selections of multiple keys, selects a character, not a subset of information elements or characters.

The rejection in the Office Action will now be reviewed in detail and each element of the rejection will be distinguished.

#### **Claims 1-10**

In claim 1, the phrase "a method for inputting information in an information processing device having an input key movable in N directions" is rejected on FIGs. 1-5 and column 7, lines 51-52. All of the keys in FIGs. 1-5 are uni-directional keys. These are just standard keys which generate an output signal when pressed. In other words, downward movement of the key generates a signal and upward movement of the key is a spring-loaded rebound and generates no signal. In column 7, the sentence starting at line 51 states "The input of either a single keystroke or a linked pair of keystrokes is effected with a pause following either which is greater than the interval threshold utilized." The Luo reference here is describing pressing down a single key or successively pressing down two keys within a time interval threshold. Luo does not teach a key movable in more than one direction, and thus does not teach an input key movable in M directions.

In claim 1, the phrase "the method comprising the acts of moving the key in one of M directions to generate N selection strokes is rejected on FIG. 1 and the abstract of the Luo reference. FIG. 1 shows keys only moving in one direction as discussed above. The abstract states "a keyboard having fewer keys than the characters available utilizes linked sequences of keystrokes



in generation of some characters....It is generally suggested that pairs of keys be linked, particularly adjacent pairs of keys in a fixed configuration...." Again, the Luo reference is talking about unidirectional keys with multiple keys being used in a linked keystroke sequence. Luo is not describing a sequence of keystroke movements by a single, multidirectional key.

In claim 1, the phrase "repeating the act of moving the key N number of times to generate N selection strokes" is rejected on FIGs. 9-10, column 12, lines 23-28. FIGs. 9 and 10 show a keyboard where multiple successive unidirectional strokes of the same key can be used to select characters. This is a well-known technique used on telephone keypads, for example. The keys in FIGs. 9 and 10 are not multidirectional keys, they are unidirectional keys. Column 12, lines 23-28 state, "In contrast to the operation required of the keyboards 20 depicted in FIGs. 9 and 10, repeated sequentially linked keystrokes of the same key 10 are not utilized. Furthermore, both the alphabetic and symbolic characters 12 and 13 are grouped in upper and lower zones similar to the arrangement utilized upon the keyboard 20 depicted in FIGs. 9 and 10." This quotation is discussing FIG. 13 in the patent, where a single stroke of the unidirectional key in FIG. 13 represents a single character. Again, the keys in FIG. 13 are unidirectional keys. Reading the claim element in the context of the claim referring back to the key, meaning the multidirectional key, there is no teaching in Luo of repeating movement of a multidirectional key to generate N selection strokes.

In claim 1, the phrase "a pattern of N selection strokes, with each stroke being in one of M directions defining the information to be input to the information processing device" is rejected based on column 7, lines 51-52 quoted above. As discussed above, these lines clearly are directed to a linking of two unidirectional key movements. Reading the phrase in the context of the claim, it is clear that the pattern refers to multiple selection strokes of a multidirectional single key and does not refer to linked strokes of multiple unidirectional keys. As all of the elements of claim 1 are clearly distinguished from the teachings of Luo as described above, claim 1 should be allowed.

In claim 2, the phrase "wherein each act of moving comprises providing a selected subset of information from a set of information choices existing prior to the act of moving" is rejected based on FIGs. 4 and 5 of the Luo reference. FIGs. 4 and 5 show that successively striking two unidirectional keys can be used to select a single character. Reading claim 2 in context with the elements of claim 1, the movement recited in claim 2 is the movement of a multidirectional single key. Thus, claim 2 is different from the teachings of Luo. In addition, claim 2 contains all of the

elements of claim 1 and thus distinguishes over Luo for the same reasons as claim 1. Claim 2 should be allowed.

Claim 3 has been rejected as anticipated by Luo, but it is not clear from the Office Action as to the basis of that rejection. In any event, claim 3 is dependant from claim 2 which is dependant from claim 1, and therefore should be allowed for at least the same reasons as discussed above for claims 2 and 1.

Claim 4, claim 6 and claim 7 specify that the information set is characters, alphabetic characters or numeric characters. These claims are allowable for the reason that they depend from claims 1 and 2 which are allowable as discussed above.

Claims 5 and 8 add a display screen for displaying the subset information sets. This claim element is rejected based on the Luo reference, column 4 lines 40-55. Column 4 lines 40-55 talk about display screens and computers. The Luo reference does not teach that these display screens are displaying subsets of information selectable by strokes of a multidirectional key. Therefore, claims 5 and 8 are allowable as distinguished from the Luo reference. In addition, claims 5 and 8 are also allowable for their dependency from claims 1 and 2 which should be allowed for the reasons discussed above.

#### **Claims 9-10 and 14-19**

Claims 9-10 and 14-19 have been rejected based on FIGs. 1 and 2 and 27. FIGs. 1, 2 and 27 all contain unidirectional keys. They do not show a multidirectional input key as required by claims 9 and 10.

The phrase "a method for interpreting a sequence of input strokes by a multidirectional input key" is rejected based on column 14, lines 25 to 28. Column 14, lines 25 to 28 state "It is next considered that both the symbols **14** and the method for formulation for alphabetic characters **12** associated with the Morse Code might be applied to the principles relating to the present invention with a keyboard **20** such as that depicted in FIG. 21." The Luo reference is describing a keystroke sequence of a key moving only in one direction. Claim 9 is claiming a sequence of input strokes by a multidirectional input key.

The claim element relating to a display of selectable information elements is rejected based on column 15, lines 63-67. Column 15, lines 63-67 state "Operation in a word processing or more general computer screen assisted environment is facilitated by the arrow and mouse modes which

enable two different means of locating a cursor upon a screen for the purpose of editing text and activating functions available upon the screen." This description refers to the keyboard in FIG. 22 having buttons that allow selection of a mouse mode or an arrow mode and allow for the unidirectional buttons in this mode to be used to move a cursor. Again, Luo is not teaching a single multidirectional input key used alone with a method for drawing a display of selectable information illustrating input stroke directions of this multidirectional key to select subsets of information. This claim phrase is rejected based also on column 12, lines 43-48. Column 12, line 43-48 states "The key 10, 15 labeled "shift" above a solid arrow effects an alteration between upper case and lower case alphabetic character 12 generation modes with a single keystroke and the same key 10, 15 effects an upward cursor movement in an arrow, i.e. cursor movement mode." Again, the Luo keys are all unidirectional keys and there is no display for selection of information set based on movement in one direction of a multidirectional input key.

The element in claim 9 of detecting a keystroke direction from movement of input key is rejected based on element 40, a keystroke encoder in FIG. 1 and column 15, lines 25-28. Keystroke encoder 40 is simply interpreting a unidirectional stroke by a key to identify the key that has been struck (column 8, lines 24-26). The reference to column 15, lines 25-28 is not understood as it is generally talking about linked keystrokes for the keyboard in FIG. 22. Clearly, the Luo reference is detecting two things. It is detecting a stroke of a unidirectional key and it is also detecting the interval of time between strokes of pairs of unidirectional keys. The Luo reference is not detecting a keystroke direction for a multidirectional key as called for in claims 9 and 10.

The claim element of identifying from the keystroke direction a selected subset of selectable information element set is rejected based on FIG. 5. FIG. 5 is a keyboard of unidirectional keys with linked pairs of keys to identify selected characters. FIG. 5 does not show identification of a keystroke direction. There is only one direction for the keys in FIG. 5.

The element of claim 9 reciting repeating the detecting action and identifying action for a predetermined number of strokes by the input key so that the identifying step after the last stroke of the input key identifies a select information element to be loaded in the computer system is rejected based on FIGs. 1 and 4, and column 10, lines 43-51 and column 12, lines 23-28. FIGs. 1 and 4, again, are unidirectional keys and linked keys. Column 10, lines 43-51 states "repeated stroking of the key 10, 15 labeled 'zero' effects a backstroke which effectively deletes the previous character entry." Thus the repeated stroking taught in the Luo reference at this citation only relates to

repeated strokes of a uni-directional key. Because of all of the above distinctions, claim 9 is allowable over the Luo reference.

Claim 10 depends from claim 9 and adds the step of loading the selected information element into a user input string for the computing system. Claim 10 should be allowed for all of the reasons discussed above for claim 9.

There is no specific discussion of how the Luo reference is applied against claims 14-19. Claim 14 is directed to updating the display after each stroke of the multidirectional key in order to display the next selected subset of information elements. Some examples are depicted in FIGs. 7 and 8 of the present patent application. The Luo reference does not show a display being updated and an update being based on the subset selected by a directional stroke of a multidirectional key. Claim 14 should be allowed.

Claim 15 is an independent claim and is directed to a single input device capable of multidirectional strokes and a user interface method for that device involving entering a directional stroke to select a subset of information and repeating said entering step until a desired information element is selected. As discussed above, the Luo reference does not have an input device capable of multidirectional strokes and does not enter a directional stroke to select subsets of information and repeat that entering step to select a desired information element with that single input device. Accordingly, claim 15 should be allowed. Claims 16-19 add displaying steps and updating of displaying steps in response to the directional strokes. These claims should be allowed as such a combination is not described in the Luo reference.

#### **Claims 20-22, 26-27 and 32-25**

Claims 20-22 and 26-27 and 32-35 have been rejected as anticipated by the Luo reference. The phrase "a computing system for interpreting directional strokes from an input button" has been rejected based on column 7, lines 51-52. As discussed above, this text in the Luo reference talks about unidirectional keys and not directional strokes of a single input button.

The phrase "to enter information into the computing system comprising a display processor drawing a display page for display screen" has been rejected based on column 4, lines 41-48. As discussed above, this citation only discusses the fact that computers have display screens. The Office Action rejects the phrase "a display page containing information elements arranged in a pattern to guide selection of information elements by directional strokes of the input button an input

adapter detecting the directional strokes by the input button, a stroke processor identifying an information element for entry in the computing system and the information element identified based on a sequence of directional strokes detected." All of this phrase is rejected based on the keystroke encoder in FIG. 1. All the keystroke encoder in FIG. 1 is doing is interpreting the activation of keys on a normal as identifying a key from a keyboard which has unidirectional keys. The keyboard encoder is not generating a display page arranged in a pattern to guide selection of information elements based on a directional stroke of a single input button.

Lastly, the phrase "wherein the stroke processor comprises information element arrays storing the information elements as a hierarchy with each stroke" is rejected based on FIG. 1 and column 7, lines 59-63. Column 7, lines 59-63 state "A keystroke encoder **40** identifies the keys **10**, **15** stroked for a translator **50** which combines this identification with the recognition provided by the character space recognizer **30** to generate the alphanumeric characters **12**, **11** represented on the keyboard **20**." This description in the Luo reference is simply talking about (1) the encoder identifying a character from a unidirectional keystroke and (2) an interval timer detecting the interval of time between linked keys so that together they identify a character. It is not clear from this a hierarchy, if any, is stored by the Luo reference. In any case, the stroke processor in claim 20 is identifying an information element based on a sequence of directional strokes, and the Luo reference does not have a sequence of directional strokes, it has a sequence of unidirectional keys that have been pressed by a user. For all of these reasons, claims 20-22, 26-27 and 32-35 should be allowed.

As all the claims in the application appear to be in condition for allowance, Applicant respectfully requests that the claims be allowed and the application passed to issue as soon as possible.

Respectfully submitted,

Dated: October 17, 2002



Homer L. Knearl  
Homer L. Knearl Reg. No. 21,197  
Merchant & Gould P.C.  
PO Box 2903  
Minneapolis, MN 55402-0903



S/N 09/652,330

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT  
**RECEIVED**

OCT 23 2002

Technology Center 2600

|             |                                  |                 |                           |
|-------------|----------------------------------|-----------------|---------------------------|
| Applicant:  | Eric Lang                        | Examiner:       | Nguyen, K.                |
| Serial No.: | 09/652,330                       | Group Art Unit: | 2674                      |
| Filed:      | August 31, 2000                  | Docket No.:     | MS150404.1/40062.0068US01 |
| Title:      | J-KEY INPUT FOR COMPUTER SYSTEMS |                 |                           |

---

**MARKED-UP COPY OF AMENDED CLAIM**

Claim 14. (AMENDED) The method of claim 9 further comprises:

updating the display, after the identifying action, to display the selected subset of the information element set identified by the identifying action whereby [the] a user is guided to the next choices available through the input key.